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Bimetallic Devices for Stirring Fluids

The problem:

To stir reactive fluids such as liquid oxygen.

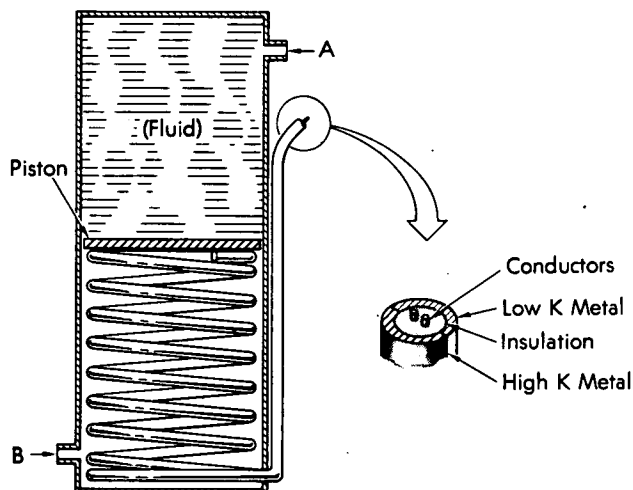
The solution:

Use an internally heated bimetallic pump to circulate the fluid.

How it's done:

One example of the bimetallic device, shown in the diagram as it would be installed in a fluid-storage tank, consists of a helical heating coil inside a cylinder and affixed at one end. At the other end of the heater coil is fastened a piston which is free to move axially through the cylinder. When electrical power is applied to the conductors inside the heating coil, the coil extends. The extension causes the piston to move toward the end of the cylinder where orifice A is located. The piston movement forces the fluid to flow out of orifice A and into the tank containing the remaining fluid to be stirred; at the same time, fluid is drawn into the cylinder at orifice B. After a suitable interval of operation, the electrical power is turned off and the spring coil is cooled by conduction. This causes the coil to contract, returning the piston toward the end of the cylinder containing the spring and orifice B, expelling the fluid from that end of the cylinder and refilling the cylinder at orifice A. Thus, heating and stirring of the contents of the fluid-storage tank is effected.

The bimetallic stirrer may also be made in the form of a vane which is moved by the bimetallic member supporting it. A bistable bimetallic "cricket" will eject spurts of fluid alternately as the "cricket" snaps from one stable position to the other upon heating and cooling.



Note:

No additional documentation is available. Specific questions, however, may be directed to:

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Reference: B 73-10029

Patent status:

Inquiries concerning rights for the commercial use of this invention should be addressed to:

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